UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

July 11, 2011

Mr. Joseph Pollock, Site Vice President
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 3 - NRC TRIENNIAL FIRE PROTECTION AND INDIAN POINT NUCLEAR GENERATING UNITS 2 AND 3 - ANNUAL FOLLOW-UP OF SELECTED ISSUES (OPERATOR MANUAL ACTIONS) INSPECTION REPORTS 05000247/2011010 AND 05000286/2011008

Dear Mr. Pollock:

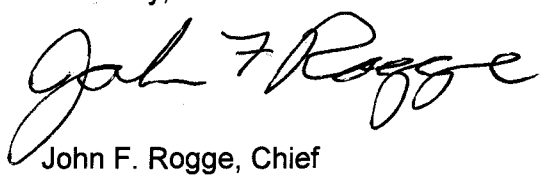
On May 27, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at Indian Point Nuclear Generating Unit 3 and an annual follow-up of selected issues inspection at Units 2 and 3. The enclosed inspection report documents the inspection results, which were discussed on May 27, 2011, with Mr. Patric Conroy and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The team reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, one finding of very low safety significance (Green) was identified. This finding was also determined to be a violation of NRC requirements. However, because of the very low safety significance, and because the finding was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a written response within 30 days of the date of this inspection report with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Senior Resident Inspector at Indian Point Nuclear Generating Unit 3. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the Senior Resident Inspector at Indian Point Nuclear Generating Unit 3. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with Title 10 of the Code of Federal Regulations Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web Site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,



John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-247, 50-286
License Nos. DPR-26, DPR-64

Enclosure:
Inspection Report Nos. 05000247/2011010 and 05000286/2011008
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

In accordance with Title 10 of the Code of Federal Regulations Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web Site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-247, 50-286
License Nos. DPR-26, DPR-64

Enclosure:
Inspection Report Nos. 05000247/2011010 and 05000286/2011008
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

Distribution: See next page

SUNSI Review Complete: JFR (Reviewer's Initials) **ADAMS ACC #ML111920339**
DOCUMENT NAME: G:\DRS\Engineering Branch 3\Triennial Fire Protection IRs\Indian Point3 FP 2011-08REV.docx
After declaring this document "An Official Agency Record" it **will** be released to the Public.
To receive a copy of this document, indicate in the box: **"C"** = Copy without attachment/enclosure **"E"** = Copy with attachment/enclosure **"N"** = No copy

OFFICE	RI/DRS		RI/DRS		RI/DRP		RI/DRS			
NAME	DOrr/JDO*		WCook/WAC*		MGray/MG*		JRogge/JFR			
DATE	06/24/11		06/30/11		07/01/11		07/11/11			
OFFICE										
NAME										
DATE										

* See Previous Concurrence OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.:	50-247, 50-286
License Nos.:	DPR-26, DPR-64
Report Nos.:	05000247/2011010 and 05000286/2011008
Licensee:	Entergy Nuclear Northeast (Entergy)
Facility:	Indian Point Nuclear Generating Units 2 and 3
Location:	450 Broadway, GSB Buchanan, NY 10511-0249
Dates:	May 9, 2011 - May 27, 2011
Inspectors:	D. Orr, Sr. Reactor Inspector, Division of Reactor Safety (Team Leader) R. Fuhrmeister, Sr. Reactor Inspector, Division of Reactor Safety J. Lilliendahl, Reactor Inspector, Division of Reactor Safety J. Rady, Reactor Inspector, Division of Reactor Safety
Accompanied by:	B. Metzger, Fire Protection Engineer, Office of Nuclear Reactor Regulation (Onsite May 24, 2011 – May 26, 2011)
Approved by:	John F. Rogge, Chief Engineering Branch 3 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000247/2011010, 05000286/2011008; 05/09/2011 – 05/27/2011; Indian Point Nuclear Generating Units 2 and 3; Unit 3 Triennial Fire Protection Team and Units 2 and 3 Annual Follow-up of Selected Issues Inspections.

The report covered a two-week triennial fire protection team inspection and annual follow-up of selected issues inspection by specialist inspectors. One finding of very low significance was identified. This finding was determined to be a non-cited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" and the cross-cutting aspect was determined using IMC 0305, "Operating Reactor Assessment Program." Findings for which the significance determination process (SDP) does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Cornerstone: Mitigating Systems

- Green. The team identified a Green, Non-Cited Violation (NCV) of Indian Point Nuclear Generating Unit 3 Operating License Condition 2.H, in that Entergy did not establish an appropriate interim compensatory measure for several fire areas where 10 CFR 50 Appendix R paragraph III.G.2 fire protection deficiencies associated with the fire protection of service water (SW) strainer motors and backwash valves existed. Specifically, Entergy in response to Regulatory Issue Summary (RIS) 2006-10, "Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions," dated June 30, 2006, identified on September 5, 2006, that operator manual actions (OMAs) were being utilized in several fire areas instead of the fire protection options specified in paragraph III.G.2 and without an exemption from the NRC staff. For fire areas that potentially impacted the electrical circuits to the SW strainers, Entergy continued to maintain the OMA to manually backwash SW strainers as an interim compensatory measure while seeking NRC staff approval through the exemption process. The team identified that the interim compensatory measure was inappropriate because it was too complex and beyond the limited scope of an OMA to achieve and maintain postfire hot shutdown. Entergy entered the Unit 3 SW strainer OMA issue into its corrective action program for long term resolution as condition report CR-IP3-2011-02951 and promptly established an hourly fire watch in fire areas where SW strainer circuits may be affected.

  This finding is more than minor because it is associated with the External Factors attribute (fire) of the Mitigating Systems Cornerstone and adversely affected its objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the reliability of SW was not ensured for fire scenarios that damage circuits to the SW strainer motor or backwash valve. The team evaluated this issue using Phase 1 of IMC 0609, Appendix F, Fire Protection Significance Determination Process (SDP), and determined that the issue screened to Green because a low degradation factor was assigned. The team assigned a low degradation factor because although the manual actions were beyond the scope of

an OMA and Entergy did not appropriately evaluate feasibility, the team determined several hours would likely exist to complete the action before strainer differential pressure (d/p) challenged SW flow to the emergency diesel generators and the OMA would be successful to maintain adequate SW flow.

The team determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution associated with the attribute of the corrective action program because Entergy personnel did not thoroughly evaluate necessary considerations associated with the Unit 3 SW strainer OMA. Specifically, Entergy walked down all OMAs on May 20, 2011, to evaluate feasibility but did not identify issues related to incomplete pre-staged tools, an OMA procedure with steps associated with normal maintenance conditions that would delay implementation, and control room annunciator circuits that may be affected by the fire. (P.1(c) per IMC 0310) (Section 4OA2.2)

REPORT DETAILS

Background

This report presents the results of a Unit 3 triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection." Additionally, the report documents the observations and findings of a Units 2 and 3 annual follow-up of selected issues in accordance with NRC IP 71152, "Problem Identification and Resolution," regarding operator manual actions interim compensatory measures for documented corrective actions related to 10 CFR 50 Appendix R paragraph III.G.2 fire protection deficiencies. The objective of the triennial fire protection inspection was to assess whether Entergy has implemented an adequate fire protection program and that post-fire safe shutdown capabilities have been established and are being properly maintained at the Indian Point Nuclear Generating Unit 3. The following fire areas (FAs) and fire zones (FZs) were selected for detailed review based on risk insights from the Indian Point Unit 3 Individual Plant Examination of External Events:

- FA CTL-3, FZ 11;
- FA CTL-3, FZ 14;
- FA PAB-2, FZ 1; and
- FA PAB-2, FZ 59A.

Inspection of these areas/zones fulfills the inspection procedure requirement to inspect a minimum of three samples.

The inspection team evaluated the licensee's fire protection program (FPP) against applicable requirements which included plant Technical Specifications, Operating License Conditions 2.H, NRC Safety Evaluations, 10 CFR 50.48, 10 CFR 50, Appendix R and Branch Technical Position (BTP) 9.5-1. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 9.6.2, the fire hazards analysis (FHA), and the post-fire safe shutdown analyses.

Unit 2 and Unit 3 licensee mitigating strategies for addressing large fires and explosions were evaluated during the Unit 2 Triennial Fire Protection Inspection in February 2010 and were documented in NRC Inspection Report 05000247/2010006 and 05000286/2010006. Unit 2 and Unit 3 licensee mitigating strategies were reviewed in April 2011 as part of the Temporary Instruction 2515/183 inspections and were documented in NRC Inspection Reports 05000247/2011009 and 05000286/2011009. These inspections complete the inspection sample requirements for the triennial fire inspection procedure cycle.

Specific documents reviewed by the team are listed in the attachment.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (IP 71111.05T)

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the fire hazards analysis (FHA), safe shutdown analyses, and supporting drawings and documentation to verify that safe shutdown capabilities were properly protected. The team ensured that applicable separation requirements of Section III.G of 10 CFR 50, Appendix R and the licensee's design and licensing bases were maintained for the credited safe shutdown equipment and their supporting power, control and instrumentation cables. This review included an assessment of the adequacy of the selected systems for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and associated support system functions.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe material conditions and the adequacy of design of fire area boundaries (including walls, ceilings, floors, fire doors and fire dampers), electrical raceway fire barriers, and equipment fire barriers to ensure they were appropriate for the fire hazards in the area.

The team reviewed installation, repair and qualification records for a sample of openings and/or penetration seals to ensure the fill material was of the appropriate fire rating and that the installation met the engineering design. The team reviewed similar records for the fire protection wraps to ensure the material was of an appropriate fire rating and that the installation met the engineering design. The team also reviewed completed surveillance and maintenance procedures for selected passive fire protection features to verify that maintenance and inspection activities are adequate.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing, and operation of the fire detection and suppression systems in the selected plant fire areas. This included verification that the manual and automatic detection and suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association (NFPA) code of record, or as NRC approved exemptions, and that each suppression system would control or extinguish fires associated with the hazards in the selected areas. A review of the design capabilities of the suppression agent delivery systems were verified to meet the code requirements for the hazards involved. The team also performed a walkdown of accessible portions of the detection and suppression systems in the selected areas as well as a walkdown of major system support equipment in other areas (e.g. fire pumps and carbon dioxide storage tanks and supply system) to assess the material condition and the operational lineup and availability of the systems and components.

The team reviewed electric and diesel fire pump flow and pressure tests to ensure that the pumps were meeting their design requirements. The team also reviewed the fire main loop flow tests to ensure that the flow distribution circuits were able to meet the design requirements.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also compared pre-fire plans for the selected fire areas with as-built plant conditions and fire response procedures to verify fire-fighting pre-fire plans are consistent with the fire protection features and potential fire conditions described in the FPP. In addition, the team inspected the fire brigade equipment (including smoke removal equipment) to determine operational readiness for fire fighting.

b. Findings

No findings were identified.

.04 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to verify that redundant trains of systems required for hot shutdown, which are located in the same fire area, are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire in one of the selected fire areas would not indirectly, through production of smoke, heat or hot gases, cause activation of suppression systems that could potentially damage redundant safe shutdown trains;

- A fire in one of the selected fire areas (or the inadvertent actuation or rupture of a fire suppression system) would not indirectly cause damage to redundant trains (e.g. sprinkler caused flooding of other than the locally affected train); and,

- Adequate drainage is provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Shutdown Capability – Normal and Alternative

a. Inspection Scope

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings (P&IDs), electrical drawings, the UFSAR and other supporting documents for the selected fire areas to verify that the licensee had properly identified the systems and components necessary to achieve and maintain safe shutdown conditions. The team assessed the adequacy of the selected systems and components for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and support system functions. This review included verification that alternative post-fire shutdown could be performed both with and without the availability of offsite power. Plant walkdowns were also performed to verify that the plant configuration was consistent with that described in the safe shutdown and fire hazards analyses. The team verified that the systems and components credited for use during shutdown would remain free from fire damage.

The team verified that the training program for licensed and non-licensed operators included alternative shutdown capability. The team also verified that personnel required for safe shutdown using the normal or alternative shutdown systems and procedures were trained and available onsite at all times, exclusive of those assigned as fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also verified that the operators could be reasonably expected to perform specific actions within the time required to maintain plant parameters within specified limits.

Specific procedures reviewed for normal and alternative post-fire shutdown included the following:

- 3-AOP-SSD-1, Control Room Inaccessibility Safe Shutdown Control, Rev. 11 and 12;
- 3-ELC-004-FIR, Appendix "R" Repair, Rev. 12;
- 3-ONOP-FP-1, Plant Fires, Rev. 27;
- 3-SOP-EL-012, Operation of the Alternative Safe Shutdown Equipment, Rev. 17;

- 3-SOP-EL-013, Appendix R Diesel Generator Operation, Rev. 24; and
- 3-SOP-ESP-001, Local Equipment Operation and Contingency Actions, Rev. 19.

The team reviewed manual actions to ensure that they had been properly reviewed and approved and that the actions could be implemented in accordance with plant procedures in the time necessary to support the safe shutdown method for each fire area. The team also reviewed the periodic testing of the alternative shutdown transfer capability and instrumentation and control functions to ensure the tests are adequate to ensure the functionality of the alternative shutdown capability.

b. Findings

No findings were identified.

.06 Circuit Analysis

a. Inspection Scope

The team verified that the licensee performed a post-fire safe shutdown analysis for the selected fire areas and the analysis appropriately identified the structures, systems, and components important to achieving and maintaining safe shutdown. Additionally, the team verified that the licensee's analysis ensured that necessary electrical circuits were properly protected and that circuits that could adversely impact safe shutdown due to hot shorts or shorts to ground were identified, evaluated, and dispositioned to ensure spurious actuations would not prevent safe shutdown.

The team's review considered fire and cable attributes, cable routing, potential undesirable consequences and common power supply/bus concerns. Specific items included the credibility of the fire threat, cable insulation attributes, cable failure modes, and actuations resulting in flow diversion or loss of coolant events.

The team also reviewed cable raceway drawings and/or cable routing databases for a sample of components required for post-fire safe shutdown to verify that cables were routed as described in the safe-shutdown analysis. The team also reviewed equipment important to safe shutdown, but not part of the success path, to verify that the licensee had taken appropriate actions in accordance with the design and licensing basis and NRC Regulatory Guide 1.189.

Cable failure modes were reviewed for the following components:

- 31 charging pump;
- 32 charging pump;
- 32 component cooling water pump;
- LI-459 pressurizer level instrument;
- LI-417D 31 steam generator wide level instrument; and,
- PI-402B, reactor coolant system loop 1 pressure instrument.

The team reviewed a sample of circuit breaker coordination studies to ensure equipment needed to conduct post-fire safe shutdown activities would not be impacted due to a lack of coordination that could result in a common power supply or common bus concern.

The team verified that the transfer of control from the control room to the alternative shutdown location(s) would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the safe shutdown analysis, and associated documents to verify an adequate method of communications would be available to plant operators following a fire. During this review the team considered the effects of ambient noise levels, clarity of reception, reliability, and coverage patterns. The team also inspected the designated emergency storage lockers to verify the availability of portable radios for the fire brigade and for plant operators. The team also verified that communications equipment such as repeaters and transmitters would not be affected by a fire.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of eight-hour emergency lights throughout the selected fire areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation or instrumentation monitoring for post-fire safe shutdown. The team also verified that the battery power supplies were rated for at least an eight-hour capacity. Preventive maintenance procedures, the vendor manual, completed surveillance tests, and battery replacement practices were also reviewed to verify that the emergency lighting was being maintained consistent with the manufacturer's recommendations and in a manner that would ensure reliable operation.

b. Findings

No findings were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

The team verified that the licensee had dedicated repair procedures, equipment, and materials to accomplish repairs of components required for cold shutdown which might be damaged by the fire to ensure cold shutdown could be achieved within the time frames specified in their design and licensing bases. The team verified that the repair equipment, components, tools, and materials (e.g., pre-cut cables with prepared attachment lugs) were available and accessible on site.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were in place for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g. detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team also verified that the short term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that the licensee was effective in returning the equipment to service in a reasonable period of time.

The team reviewed compensatory measures in the form of manual actions for 10 CFR Part 50 Appendix R, Section III.G.2 areas to verify that there is reasonable assurance that manual actions can be accomplished. Specific attributes reviewed include diagnostic instrumentation, environmental consideration, staffing, communications, equipment availability, training, procedures, and verification and validation. On September 5, 2006, Entergy documented in condition reports CR-IP2-2006-05299 and CR-IP3-2006-02747 that operator manual actions were inappropriately credited in lieu of one of the means of fire protection required by 10 CFR 50 Appendix R, paragraph III.G.2 in several Unit 2 and Unit 3 fire areas. A detailed follow-up of this issue is documented in section 4OA2 of this inspection report.

b. Findings

See section 4OA2 of this inspection report.

.11 Fire Protection Program Changes

a. Inspection Scope

The team reviewed recent changes to the approved fire protection program to verify that the changes did not constitute an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed the licensee's procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FHA. A sample of hot work and transient combustible control permits were also reviewed. The team performed plant walkdowns to verify that transient combustibles and ignition sources were being implemented in accordance with the administrative controls.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

.01 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team verified that the licensee was identifying fire protection and post-fire safe shutdown issues at an appropriate threshold and entering them into the corrective action program. The team also reviewed a sample of selected issues to verify that the licensee had taken or planned appropriate corrective actions.

b. Findings

No findings were identified.

.2 Selected Issue Follow-up Inspection: Indian Point Units 2 and 3 Operator Manual Actions

a. Inspection Scope

On June 30, 2006, the NRC issued Regulatory Issue Summary (RIS) 2006-10, "Regulatory Expectations with Appendix R paragraph III.G.2 Operator Manual Actions (OMAs)," which provided guidance for the resolution of OMAs in lieu of one of the means specified in Appendix R paragraph III.G.2 to ensure a train is free of fire damage when redundant trains were in the same fire area. In accordance with RIS 2006-10 and Enforcement Guidance Memorandum (EGM) 98-002, Revision 2, Supplement 1 – "Disposition of Violations of 10 CFR Part 50, Appendix R, Sections III.G and III.L, Regarding Circuit Failures," Entergy submitted exemption requests for OMAs at Indian Point Units 2 and 3. Also, in accordance with EGM 98-002, Entergy implemented OMAs as interim compensatory measures while the exemption requests were being reviewed by the NRC's Office of Nuclear Reactor Regulation (NRR).

The team performed a focused inspection of the OMAs that were being credited as interim compensatory actions pending NRC review of OMAs submitted as part of their exemption requests. This inspection assessed the adequacy of the OMAs as interim compensatory actions. The review of OMAs associated with exemption requests is being conducted by NRR staff under the NRC exemption review process in accordance with 10 CFR 50.12. The team interviewed associated engineers to understand the specific required actions and time margins for the OMAs. The team independently reviewed the procedures that would be used to implement the OMAs. Finally, the team walked down all of the OMAs being credited as interim compensatory measures for deficient III.G.2 Unit 2 and Unit 3 fire areas with plant operators to assess the feasibility of the actions using the guidance in IP 71111.05T, Section 02.02.j.2.

b. Findings

Inappropriate Interim Compensatory Measure for Service Water Strainer Backwash Function

Introduction: The team identified a Green, Non-Cited Violation (NCV) of Indian Point Nuclear Generating Unit 3 Operating License Condition 2.H, in that Entergy did not establish an appropriate interim compensatory measure for several fire areas where 10 CFR 50 Appendix R, paragraph III.G.2 fire protection deficiencies associated with the fire protection of service water (SW) strainer motors and backwash valves existed. Specifically, Entergy in response to RIS 2006-10, identified on September 5, 2006, that operator manual actions (OMAs) were being utilized in several fire areas instead of the fire protection options specified in paragraph III.G.2 and without an exemption from the NRC staff. For fire areas that potentially impacted the electrical circuits to the SW strainers, Entergy continued to maintain the OMA to manually backwash SW strainers as an interim compensatory measure while seeking NRC staff approval through the exemption process. The team identified that the interim compensatory measure was inappropriate because it was too complex and beyond the limited scope of an OMA to achieve and maintain post fire hot shutdown.

Description: 10 CFR 50 Appendix R paragraph III.G.2 requires that where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of three means of protecting cables to ensure that one of the redundant trains is free of fire damage shall be provided. The three acceptable means described in paragraph III.G.2 to ensure one of the redundant trains in the same fire area is free of fire damage are based on the use of physical barriers, spatial separation, or fire detection and an automatic fire suppression system. RIS 2006-10, an NRC generic communication to licensees, described how licensees historically and inappropriately compensated for the lack of III.G.2 protection methods by relying on OMAs which had not been reviewed and approved by the NRC through the 10 CFR 50.12 exemption process. RIS 2006-10 also provided information useful to licensing and engineering staffs at operating reactors in achieving compliance with paragraph III.G.2 if unapproved OMAs in lieu of III.G.2 fire protection methods were identified by licensees. For plants licensed to operate before January 1, 1979, such as Indian Points Units 2 and 3, the use of OMAs in lieu of one of the means specified in III.G.2, requires an exemption under 10 CFR 50.12.

Entergy reviewed RIS 2006-10 and on September 5, 2006, identified several III.G.2 non-compliances at both Unit 2 and Unit 3 where OMAs were being relied upon and were not approved by the NRC. Entergy entered the issues into the corrective action program as CR-IP2-2006-05299 and CR-IP3-2006-02747. Entergy further evaluated each existing OMA using guidance to inspectors on compensatory measures and specifically OMAs in NRC Inspection Procedure 71111.05T, Fire Protection (Triennial), Section 02.02.j.2. On September 8, 2006, Entergy concluded the OMAs in non-compliant III.G.2 fire areas were acceptable as interim compensatory measures. Entergy documented the evaluations of each Unit 2 and Unit 3 OMA in condition reports, CR-IP2-2006-05299 and CR-IP3-2006-02747. Consistent with the guidance in RIS 2006-10, Entergy also submitted an exemption request under 10 CFR 50.12 for NRC approval of each OMA.

The team similarly reviewed the guidance in IP 71111.05T, Section 02.02.j.2 but determined an interim compensatory measure or OMA for manually backwashing Unit 3 SW strainers was inappropriate. SW provides the necessary cooling for emergency diesel generator (EDG) operation during postfire safe shutdown. Entergy's safe shutdown analysis credited the EDG's for the affected III.G.2 fire areas. The SW strainers clean the Hudson River water removing small debris and detritus. The SW strainer function is important and prevents SW cooled components, such as the EDGs, from being fouled and a subsequent loss in heat removal capability. During normal operation, the SW strainers automatically backwash 5 minutes for every 2 hours of operation. Backwash is automatically accomplished when an air operated backwash valve opens and a motor at the top of the SW strainer rotates the backwash arm. Debris or detritus that collected on the strainer is removed and eliminated through the backwash valve. The OMA compensated for the fire induced loss of automatic function by performing the same backwash action. However an operator must manually open the backwash valve and manually rotate the SW strainer backwash arm. Each is rotated by a wrench that is placed on an extruding stem flat. Prior to rotating the backwash valve, instrument air lines to the backwash valve actuator must also be removed with a wrench.

Additionally, the motor actuator to the backwash arm must be disengaged. Required tools include various size wrenches, needle nose pliers, a flat head screwdriver, and a ruler which is used to measure the backwash arm to the proper height and clearance.

The team reviewed the OMA considerations in IP 71111.05T Section 02.02.j.2 and determined those not appropriately considered by Entergy included diagnostic instrumentation, equipment availability, and procedures.

- Diagnostic Instrumentation was inadequately considered because Entergy did not verify that the control room high differential pressure (d/p) annunciator circuits were not affected by the fire or did not provide compensatory measures to frequently backwash the SW strainers. Entergy relied on an initial local observation of SW strainer d/p and provided instructions in procedure 3-ONOP-FP-1, Plant Fires, Rev. 27, to manually backwash the strainer if d/p exceeded 6 pounds per square inch differential (psid), however, after the initial reading, no further procedure instructions existed to monitor the local d/p indicator.
- Equipment availability was inadequately considered because the necessary tools were not dedicated and readily available. Only one wrench was provided which was sized to rotate the valve actuator and it was either too big or too small for all other required wrench operations. Additionally, Entergy did not evaluate the torque required to rotate the SW strainer with a wrench and evaluate the feasibility of an operator completing the rotation for a given length wrench.
- Procedures were inadequately considered because 3-STR-0002-SWS, Main and Back-Up Service Water Pump Strainer Manual Backwashing (In the Event of Appendix R Loss of Strainer Power Supply), Rev. 2 did not appropriately expedite the manual action for the postfire safe shutdown circumstances. 3-STR-0002-SWS included unnecessary steps such as requiring planning department involvement and a work order, reading through Attachment 1, Industry Experiences prior to the start of work, establishing a clean work area, and other normal work controls that would inappropriately delay the OMA.

Additionally, the team further determined that the manual actions to backwash a SW strainer were too complex for the limited scope of an OMA. Regulatory Guide (RG) 1.189, Fire Protection for Nuclear Power Plants, Rev. 2, defined OMAs as actions that are performed by operators to manipulate components and equipment from outside the control room to achieve and maintain postfire hot shutdown, not including repairs. RG 1.189 included examples of OMAs as the manual operation of valves, switches, and circuit breakers to operate equipment and isolate systems and is not considered a repair. The team concluded Entergy's actions to manually backwash a SW strainer were significantly beyond actions comparable to these and were too complex to be an OMA.

The team also noted that Entergy had an opportunity to recently identify the inadequate OMA considerations. On May 18, 2011, Entergy initiated condition reports CR-IP2-2011-02417 and CR-IP3-2011-02853 to re-evaluate the feasibility of OMAs. Entergy walked down all OMAs on May 20, 2011, but did not identify these issues related to Unit 3 SW strainer OMA. Finally, the team noted that because there are distinct

differences in FPP designs between Unit 2 and Unit 3, a Unit 2 SW strainer OMA in lieu of paragraph III.G.2 protection methods was not in place. Nonetheless, Entergy initiated a corrective action with CR-IP3-2011-02951 to evaluate this issue for extent of condition applicability to Unit 2.

Entergy entered the Unit 3 SW strainer OMA issue into its corrective action program for long term resolution as condition report CR-IP3-2011-02951 and promptly established an hourly fire watch in fire areas where SW strainer circuits may be affected: ETN-4, TBL-5, and YARD-7. The team concluded that the establishment of an hourly fire watch in the affected fire areas as an interim compensatory measure was commensurate with the risk significance. The team also noted that all other Unit 2 and Unit 3 OMAs were judged as feasible interim compensatory measures for non-compliant III.G.2 fire areas.

Analysis: Entergy's failure to establish an adequate interim compensatory measure for the Unit 3 SW strainer III.G.2 non-compliance is a performance deficiency. This finding is more than minor because it is associated with the External Factors attribute (fire) of the Mitigating Systems Cornerstone and adversely affected its objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the reliability of SW was not ensured for fire scenarios that damage circuits to the SW strainer motor or backwash valve.

The team evaluated this issue using Phase 1 of IMC 0609, Appendix F, Fire Protection Significance Determination Process (SDP), and determined that the issue screened to Green because a low degradation factor was assigned. The team assigned a low degradation factor because although the manual actions were beyond the scope of an OMA and Entergy did not appropriately evaluate feasibility, the team determined several hours would exist to complete the action before strainer d/p challenged SW flow to the EDGs and the OMA would be successful to maintain adequate SW flow. The time interval was based on historic plant data that charted very low strainer buildup within the automatic two hour interval and a maintenance activity when the strainers were operated without the backwash function, in one case for about 62 hours. The strainers are rated to 17 psid and adequate SW cooling was evaluated to exist at this d/p. Typical strainer buildup is 1 to 2 psid within the 2 hour interval prior to automatic backwash. Additionally, although the proper tools and an expeditious procedure were not staged for the SW strainer OMA, the tools were ordinary and would be readily available on site and the manual backwash procedure instructions were consistent with those also described in the vendor manual. The team considered the worst case torque (138 foot-pounds) to rotate the strainer and it was within reason to be rotated by hand with a long wrench. Finally, the team determined that the expected slow debris buildup and resultant increase in SW strainer d/p would be sufficiently monitored during operator rounds. Based on these considerations, a low degradation factor was assigned and the issue screened to very low safety significance (Green).

As stated above, Entergy entered this issue into the corrective action program (reference CR-IP3-2011-02951) and promptly initiated hourly fire watches in fire areas where SW strainer circuits may be affected. The team concluded that Entergy's compensatory measures were commensurate with the risk significance.

The team determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution associated with the attribute of the corrective action program because Entergy personnel did not thoroughly evaluate necessary considerations associated with the Unit 3 SW strainer OMA. Specifically, Entergy walked down all OMAs on May 20, 2011, to evaluate feasibility but did not identify the issues related to incomplete pre-staged tools, the cumbersome 3-STR-002-SWS procedure, and d/p annunciator circuits that may be affected by the fire. (P.1(c) per IMC 0310)

Enforcement. Indian Point Unit 3 Operating License Condition 2.H requires, in part, that Entergy shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR. UFSAR Section 9.6.2, Fire Protection, Rev. 03, 2009, includes the Indian Point Energy Center (IPEC) FPP Plan as part of the FPP. SMM-DC-901, IPEC FPP Plan, Section 6.4.1, Rev. 7, states that impairment of fire protection features shall be compensated for by measures appropriate to the conditions. Contrary to the above, on May 26, 2011, the NRC identified that Entergy did not meet this requirement and had not historically met this requirement for three fire areas: ETN-4, TBL-5, and YARD-7. Entergy failed to protect the SW strainer motor and backwash valve circuits from a postulated fire-induced circuit failure and implemented an operator manual action in lieu of fire protection that was not appropriate to the conditions because it was not properly evaluated for feasibility. Because this finding was of very low safety significance and was entered into Entergy's corrective action program (CR-IP3-2011-02951), this violation is being treated as a non-cited violation, consistent with Section 2.3.2. of the NRC Enforcement Policy. **(NCV 05000286/2011008-001, Inappropriate Interim Compensatory Measure for Service Water Strainer Backwash Function)**

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented their preliminary inspection results to Mr. Patric Conroy, Director, Nuclear Safety Assurance, and other members of the site staff at an exit meeting on May 27, 2011. No proprietary information was included in this inspection report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Pollock, Site Vice President
J. Cottam, Fire Protection Engineer
G. Dahl, Licensing Engineer
K. Elliot, Safe Shutdown Engineer
D. Halama, Fire Protection Engineer
R. Schimpf, Senior I&C Design Engineer
M. Tesoriero, Manager, Programs and Components
M. Troy, Supervisor, Plant Programs
A. Vitale, General Manager, Plant Operations

NRC

J. Rogge, Chief, Engineering Branch 3, Division of Reactor Safety
W. Cook, Senior Reactor Analyst, Division of Reactor Safety
P. Cataldo, Senior Resident Inspector, Indian Point Nuclear Generating Unit 3
M. Halter, Resident Inspector, Indian Point Nuclear Generating Unit 3
D. Frumkin, Team Leader, Fire Protection Branch, Office of Nuclear Reactor Regulation
B. Metzger, Fire Protection Engineer, Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NONE

Opened and Closed

NCV	05000286/2011008-01	Inappropriate Interim Compensatory Measure for Service Water Strainer Backwash Function

Closed

NONE

Discussed

NONE

LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing Documents

IP3-ANAL-FP-01503, IP3 Nuclear Power Plant Safe Shutdown Analysis Report, Rev. 2
IP3-ANAL-FP-02143, Entergy Nuclear Northeast Fire Hazards Analysis Report, Rev. 4
SMM-DC-901, IPEC Fire Protection Program, Rev. 7

Design Changes

CP-05-006, Appendix R Safe Shutdown Analysis Update Change Package, Rev. 0
EC-7990, Install New Appendix R Emergency Light in the Unit 3 Control Room, Rev. 0

Calculations/Engineering Evaluation Reports

0247-09-0013.034, IP3 Nuclear Power Plant Fire Probabilistic Risk Assessment Multiple Spurious Operations Report, Rev. 0
IP-CALC-04-00766, IP3 Steam Generator Boil-Dry Analysis with RETRAN-3D, Rev. 2
IP-CALC-05-01034, Appendix R Cooldown Benchmark, and Sensitivity Analysis using RETRAN-3D, Rev.2
IP-CALC-06-00029, Appendix R Cooldown to RHR Initiation using RETRAN-3D, Rev. 2
IP-RPT-09-00012, Validation of Operator Manual Actions Credited for Appendix R, Section III.G Fire Areas, Rev. 0
IP-RPT-11-00011, Evaluation of Fire Separation of Cable Spreading Room from Control Room, Rev. 0
IP3-ANAL-FP-02143, Fire Hazards Analysis Report, Rev. 1
IP3-ANAL-FP-01049, Fire Barrier Analysis Cable Spreading Room to Electrical Tunnels, Rev. 1
IP3-ANAL-FP-01050, Evaluation of Fire Doors In Accordance with Generic Letter 86-10 "Implementation of Fire Protection Requirements"
IP3-ANAL-FP-01053, Evaluation Of Supports For Cable Trays Penetrating Barriers Between Turbine Building and Cable Spreading Room and Between Cable Spreading Room and Electrical Tunnels, Rev. 1
IP3-ANAL-FP-01264, Fire Doors Nos. 201, 203 and 205 Separating the Turbine Building from the Control Building, Rev. 0
IP3-CRVE-ED-CC-BUS2-B23/B27, IP3 Electrical Distribution System Coordination Study, Rev. 0
IP3-CRVE-ED-CC-BUS2A-30D, 480VAC Electrical Distribution System Coordination Study, Rev. 0
IP3-CRVE-ED-CC-BUS3-B3/B7, IP3 Electrical Distribution System Coordination Study, Rev. 0
IP3-CRVE-ED-CC-BUS3A-5C, 480VAC Electrical Distribution System Coordination Study, Rev. 0
IP3-CRVE-ED-CC-BUS5-B18/B20, IP3 Electrical Distribution System Coordination Study, Rev. 0
IP3-CRVE-ED-CC-BUS5-B19/20, IP3 Electrical Distribution System Coordination Study, Rev. 0
IP3-CRVE-ED-CC-BUS5A-22C, 480VAC Electrical Distribution System Coordination Study, Rev. 2
IP3-RPT-ED-00922, Electrical Coordination Study, Rev. 1
P2081-07-001, Entergy IP3 Nuclear Power Plant Regulatory Guide 1.189 Support Project, Rev. B
NEA-00031, IP2 Steam Generator Boil-Dry Analysis with RETRAN-3D, Rev. 1
SEE-03-53, RHR Cooldown Analysis for the Power Uprate Program, Rev. 0

Procedures

3-PC-OL01B, Reactor Coolant System Wide Range Temperature Appendix R Instruments Calibration and Transfer Switch Check, Rev. 5

3-PC-OL07A, Steam Generator Appendix R Transfer Switch Check, Rev. 0
3-PC-R03A, Pressurizer Level Transmitters Check and Calibration, Rev. 15
3-PT-2Y014, Appendix R DG Rated Load and Overspeed Test, Rev. 1
3-PT-M090, Appendix R DG Functional Test, Rev. 15
3-PT-M099, Safe Shutdown Instrument Channel Checks and Miscellaneous Equipment Surveillance, Rev. 7
3-PT-Q104, Appendix R Alternate Safe Shutdown Instrument Channel Checks, Rev. 12
3-PT-R150, Test of Appendix R Alternate Feed to Component Cooling Pump 32, Rev. 3
3-PT-R151, Test of Appendix R Alternate Feed to 31 and 32 Charging Pumps, Rev. 3
3-PT-R152, Operability Test of Safe Shutdown Instrumentation, Rev. 8
3-PT-W012, Appendix R Diesel Support Systems Inspection, Rev. 19
EN-DC-127, Control Of Hot Work And Ignition Sources, Rev. 8
EN-DC-128, Fire Protection Impact Reviews, Rev. 4
EN-DC-161, Control Of Combustibles, Rev. 4
EN-LI-108-01, 10CFR21 Evaluations and Reports, Rev. 02-ONOP-FP-001, Plant Fires, Rev. 7

Operations Procedures
3-AOP-SSD-1, Control Room Inaccessibility Safe Shutdown Control, Rev. 11 and 12
3-ELC-004-FIR, Appendix "R" Repair, Rev. 12
3-ONOP-FP-1, Plant Fires, Rev. 27
3-SOP-EL-001, Diesel Generator Operation, Rev. 45
3-SOP-EL-012, Operation of the Alternative Safe Shutdown Equipment, Rev. 17
3-SOP-EL-013, Appendix R Diesel Generator Operation, Rev. 24
3-SOP-ESP-001, Local Equipment Operation and Contingency Actions, Rev. 19

Completed Tests/Surveillances
0-PT-M-002, Alternative Safe Shutdown Equipment Inventory and Inspection, completed 4/24/11
0-PT-Q-001, Alternative Shutdown Equipment Inventory and Inspection, completed 3/4/11 and 3/21/11
3-PC-OL01B, Reactor Coolant System Wide Range Temperature Appendix R Instruments Calibration and Transfer Switch Check, Rev. 5, completed 9/21/07 and 12/17/09
3-PC-OL07A, Steam Generator Appendix R Transfer Switch Check, Rev. 0, completed 11/30/09
3-PC-R03A, Pressurizer Level Transmitters Check and Calibration, Rev. 15, completed 3/28/09 and 3/30/11
3-PT-2Y014, Appendix R DG Rated Load and Overspeed Test, Rev. 1, completed 5/31/08 and 4/16/10
3-PT-2Y004, CO2 System Test For Cable Spreading and Switchgear Rooms, Rev. 4, completed 12/11/10
3-PT-2Y004, CO2 System Test For Cable Spreading and Switchgear Rooms, Rev. 4, completed 12/12/10
3-PT-A023, Balance of Plant Conventional Fire Detection and Alarm Systems, Rev. 8, completed 10/10/10
3-PT-M024A, Electric Fire Pump Test, Rev. 4, completed 1/19/11
3-PT-M090, Appendix R DG Functional Test, Rev. 15, completed 10/3/10, 12/20/10, and 3/4/11
3-PT-M099, Safe Shutdown Instrument Channel Checks and Miscellaneous Equipment Surveillance, Rev. 7, completed 1/14/11
3-PT-Q104, Appendix R Alternate Safe Shutdown Instrument Channel Checks, Rev. 12, completed 12/22/10

3-PT-R084, Fire Pump Functional Test, Rev. 17, completed 9/1/10
3-PT-R084, Fire Pump Functional Test, Rev. 18, completed 1/13/11
3-PT-R100, Fire Barrier Seal Inspection, Rev. 6, completed 6/21/10
3-PT-R118, Steam Bridge Water Spray Curtain Test, Rev. 6, completed 6/23/10
3-PT-R150, Test of Appendix R Alternate Feed to Component Cooling Pump 32, Rev. 3, completed 8/30/09
3-PT-R151, Test of Appendix R Alternate Feed to 31 and 32 Charging Pumps, Rev. 3, completed 7/18/09
3-PT-R152, Operability Test of Safe Shutdown Instrumentation, Rev. 8, completed 3/8/09
3-PT-SA13, Fire Protection System Smoke Detector Test, Rev. 15, completed 5/3/10
3-PT-W012, Appendix R Diesel Support Systems Inspection, Rev. 19, completed 4/9/11, 4/16/11, and 4/23/11

Quality Assurance Audits and Self Assessments
QA-16-2009-IP-1, Fire Protection Audit, dated 2/16/10
QS-2010-IP-15, Fire Protection Surveillance Report, dated 7/14/10

Drawings and Wiring Diagrams
500B971, Sheet 26, IP3 Elementary Wiring Diagram Charging Pump 31, Rev. 10
500B971, Sheet 45, IP3 Elementary Wiring Diagram Component Cooling Pump 32, Rev. 9
500B971, Sheet 72, IP3 Elementary Wiring Diagram Charging Pump 32, Rev. 10
617F644, IP3 480V One Line Diagram, Rev. 33
9321-F-20193, IP3 Flow Diagram Boiler Feedwater, Rev. 60
9321-F-27473, Sheet 2, IP3 Flow Diagram Reactor Coolant System, Rev. 43
9321-F-27513, Sheet 1, IP3 Flow Diagram Auxiliary Coolant System in PAB and FSB, Rev. 31
9321-F-27513, Sheet 2, IP3 Flow Diagram Auxiliary Coolant System in PAB and FSB, Rev. 42
9321-F-31673, IP3 Wiring Diagram 480V Switchgear Miscellaneous, Rev. 28
9321-F-31993, IP3 Wiring Diagram – 118VAC Instrument Bus Panels 31 and 32, Rev. 49
9321-F-32273, IP3 Wiring Diagram Supervisory Control Panel SC, Rev. 39
9321-F-33553, IP3 Wiring Diagram and Miscellaneous Details Instrument Power Cabinet KH-4 Steam Generator and Pressure Instrument Isolation, Rev. 7
9321-F-33563, IP3 Wiring Diagram Instrument Isolation Terminal Boxes Channels 1 and 2, Rev. 4
9321-F-33583, IP3 Miscellaneous Schematic Diagram for Instrument Power Cabinet KH4, Rev. 4
9321-F-36033, IP3 Appendix R Onsite Alternate Power Source Diesel Generator Main One-Line Diagram, Rev. 10
9321-F-38453, IP3 Connection Diagram Instrument Racks 19 and 21, Rev. 5
9321-F-39893, IP3 Single Line Diagram 118VAC Instrument Buses 31, 31A, 32, 32A, 33, 33A, 34, and 34A
9321-F-40009, Sheet 1 of 7, Fire Area/Zone Arrangement Plans At El. 3'-3", 3'-6", 15'-0", 18'-0", and 18'-6"
9321-F-40009, Sheet 2 of 7, Fire Area/Zone Arrangement Plans At El. 27'-0", 32'-6", 33'-0", 34'-0", 35'-0" and 36'-9", Rev. 4
9321-F-40009, Sheet 3 of 7, Fire Area/Zone Arrangement Plans At El. 41'-0", 43'-0", 43'-10", 44'-0" and 47'-6", Rev. 5
9321-F-40009, Sheet 4 of 7, Fire Area/Zone Arrangement Plans At El. 51'-0", 53'-0", 54'-0", and 55'-0", Rev. 4
9321-F-40903, Sheet 1, Flow Diagram of Plant Fire Protection System Sheet No. 1, Rev 30
9321-F-40913, Sheet 2, Flow Diagram of Plant Fire Protection System, Sheet No. 2, Rev. 28

9321-F-40913, Sheet 3, Flow Diagram of Plant Fire Protection System, Sheet No. 3, Rev. 5
9321-H-36933, Extension of Electrical Facilities One Line Diagram, Rev. 11
9321-H-39913, IP3 External Connection Diagram Reactor Coolant System Rack No. 18, Rev. 6
9321-LI-31173, Sheet 5, IP3 Schematic Diagram 480V Switchgear 31, Rev. 22
9321-LI-31173, Sheet 5A, IP3 Schematic Diagram 480V Switchgear 31, Rev. 2
9321-LI-31173, Sheet 6, IP3 Schematic Diagram 480V Switchgear 31, Rev. 25
9321-LI-31173, Sheet 6A, IP3 Schematic Diagram 480V Switchgear 31, Rev. 5
9321-LI-31173, Sheet 6B, IP3 Schematic Diagram 480V Switchgear 31, Rev. 4
9321-LI-31173, Sheet 19, IP3 Schematic Diagram 480V Switchgear 31, Rev. 6
9321-LI-31173, Sheet 19A, IP3 Schematic Diagram 480V Switchgear 31, Rev. 4
9321-LI-31173, Sheet 24A, IP3 Schematic Diagram 480V Switchgear 31, Rev. 6
9321-LI-31173, Sheet 42A, IP3 Schematic Diagram 480V Switchgear 31, Rev. 5
9321-LI-31183, Sheet 48A, IP3 Schematic Diagram 480V Switchgear 32, Rev. 9
9321-LI-38023, Sheet 1, IP3 Schematic Diagram 480V Motor Control Center 312A, Rev. 1
9321-LI-38023, Sheet 2A, IP3 Schematic Diagram 480V Motor Control Center 312A, Rev. 1
9321-LI-38023, Sheet 3, IP3 Schematic Diagram 480V Motor Control Center 312A, Rev. 1
9321-LI-38023, Sheet 3A, IP3 Schematic Diagram 480V Motor Control Center 312A, Rev. 1
9321-LI-38023, Sheet 3, IP3 Schematic Diagram 480V Motor Control Center 312A, Rev. 3
9321-LI-38023, Sheet 4, IP3 Schematic Diagram 480V Motor Control Center 312A, Rev. 2

Piping and Instrumentation Diagrams
9321-F-20173, IP3 Flow Diagram Main Steam, Rev. 71
9321-F-27363, IP3 Flow Diagram Chemical and Volume Control System, Rev. 51
9321-F-27373, IP3 Flow Diagram Chemical and Volume Control System, Rev. 37
9321-F-27383, IP3 Flow Diagram Reactor Coolant System, Rev. 27
9321-F-27473, IP3 Flow Diagram Reactor Coolant System, Rev. 43
9321-F-27513, Sheet 1, IP3 Flow Diagram Auxiliary Coolant System in PAB and FSB, Rev. 31
9321-F-27513, Sheet 2, IP3 Flow Diagram Auxiliary Coolant System in PAB and FSB, Rev. 42
9321-F-20193, Flow Diagram Boiler Feedwater, Rev. 60
9321-F-27223, Flow Diagram Service Water System, Rev. 43
9321-F-27363, Sheet 1, Flow Diagram Chemical and Volume Control System, Rev. 51

Vendor Manuals
1158-100000P44, Automatic Strainers 596 Series, dated 12/27/88

Pre-Fire Plans
PFP 306A, CCW Pump Room
PFP 352, Cable Spread Room
PFP 351, 480V Switchgear Room
PFP 311, Upper Pipe Penetration Area

Fire Brigade Drill Reports

01/14/10	06/02/10	08/05/10	12/06/10	02/24/11
01/21/10	06/17/10	08/10/10	12/07/10	03/28/11
02/16/10	06/21/10	08/11/10	12/09/10	04/21/11
03/06/10	06/25/10	09/14/10	12/15/10	04/25/11
03/10/10	06/28/10	10/20/10	12/23/10	
03/14/10	06/30/10	11/07/10	02/04/11	
03/18/10	07/28/10	12/02/10	02/11/11	

Fire Brigade Training

EN-TQ-125, Fire Brigade Drills, Rev. 1
IP-SMM-TQ-122, Fire Protection Training Program, Rev. 2
Offering 11458, 09/15/10, Annual Fire Brigade Leadership Training
Offering 114967, 09/22/10, Initial Fire Brigade Leadership

Operator Safe Shutdown Training

I3LP-LOR-AOP-010, Licensed Operator Requalification Training: Safe Shutdown Outside of the Control Room, Rev. 2
I3LP-ILO-AOPSSD, Initial Licensed Operator Training: Control Inaccessibility Safe Shutdown Control, Rev. 2

Operations Document Feedback Forms

IP3-10922	IP3-10944	IP3-10954	IP3-10955	IP3-10956

Miscellaneous Documents

Fire Resistance Directory, January 1983
IP3-RPT-FP-01163, NFPA Code Compliance Review Report, Rev. 3
NFPA 12-2008, CO2 Systems
NFPA 12-1977, CO2 Systems
SMM-DC-908, IPEC Site Management Manual Fire Watch Log, Rev. 4, completed 5/9/11
UL Building Materials Directory, January 1983

Condition Reports

CR-IP2-2006-05299	CR-IP3-2011-02477	CR-IP3-2011-02916*
CR-IP3-2006-02747	CR-IP3-2011-02713*	CR-IP3-2011-02926*
CR-IP3-2009-04823	CR-IP3-2011-02750*	CR-IP3-2011-02928*
CR-IP3-2010-01091	CR-IP3-2011-02766*	CR-IP3-2011-02942
CR-IP3-2010-01842	CR-IP3-2011-02770*	CR-IP3-2011-02951
CR-IP3-2011-00653	CR-IP3-2011-02853	CR-IP3-2011-02961*

* NRC identified during this inspection.